

# **NASA Weather Accident Prevention Project Review (May 2000) Survey Summary**

## **Strengths in NASA's Weather Accident Prevention Project**

1. Strong industry, government and academia partnerships
2. Industry is geared to market NASA developed products
3. Solid end-to-end technology development

## **Weaknesses in NASA's Weather Accident Prevention Project**

1. Better links needed to FAA requirements/implementation processes and offices
2. Independent assessment of technology needed to ensure market interests do not overshadow safety and certification concerns.
3. Human factors and certification issues were not clearly addressed in many of the products presented at the review.
4. Continued FAA collaboration needed to shorten certification cycle.
5. Higher degree of systems integration needed for products being developed
6. Product training is absent in project.
7. Insufficient communications with DoD programs and experiences

## **Technology gaps in NASA product suite not covered by other NASA and non-NASA programs**

1. Integration of air traffic in weather displays
2. Development of multi-hazard (turbulence, icing etc) forward looking sensors
3. Integration with ground based equipment and users
4. Human factors design in weather display and interpretation

## **Greatest hurdle in developing the NASA funded products as presented at the review**

### **1. Transport AWIN System**

- a. Weather product improvements
- b. Hardware certification and operational approval
- c. Pilot workload
- d. Retrofit cost in older aircraft
- e. Communication link to handle weather data load

### **2. GA AWIN System**

- a. Affordability
- b. Hardware certification and operational approval
- c. Communication link to handle weather data load

### **3. E-PIREP/AUTOMET System**

- a. Establishing user incentives

- b. Examining broader (non-aviation) concepts
- c. Maintenance of sensor equipment
- d. Hardware certification and operational approval

#### **4. Enhanced Turbulence Radar**

- a. Limited testing opportunities
- b. Getting long enough warning time to make effective action
- c. Hardware certification and operational approval

#### **5. Turbulence LIDAR Detector**

- a. Limited testing opportunities
- b. Getting long enough warning time to make effective action
- c. Affordability
- d. Effectiveness at cruising altitudes
- e. Hardware certification and operational approval

#### **6. Enhanced Weather Products**

- a. Format and content of weather products
- b. Keeping focused on decision-aides versus a proliferation of color graphics
- c. Sufficient resolution on small display
- d. Data input to feed models

#### **7. Turbulence Mitigation and Control**

- a. Collaboration with DoD especially Air Force

#### **8. Turbulence In-Situ**

- a. Examining broader (non-aviation) concepts

### **To what extent should terminal weather information be part of any envisioned AWIN System**

- a. Should include GA to Transport categories with higher weight towards GA
- b. AWIN Concepts and development should be tied to existing FAA ITWS and Collaborative Decision programs
- c. ATC and Aircraft will have to look at similar weather data
- d. To the extent that real time data can be provided

### **How valuable was the NASA WxAP Project Review**

Rating Average: 4.3 (1= no value, 2=little, 3=moderate, 4=highly, 5=extremely valuable)

### **Recommendations for 2001 NASA WxAP Review**

- a. Present FAA links to product implementation
- b. Emphasis FAA coordination
- c. Invite more aircraft operators
- d. Emphasis NOAA coordination

- e. Limit presentation to 30 minutes max each
- f. Provide free AvSP shirts/sweatshirts
- g. Emphasize NASA Aircraft Icing Program
- h. Emphasize Human Factors element in Project

**Areas for increased FAA-NASA Integration**

- a. Define requirements/operational process for product implementation
- b. Cockpit integration
- c. CNS/ATM integration